**Evaluation of Tool Support for Architectural Evolution**

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### Introduction

**Software Architecture**
- Business, technology, process and organization dimension
- Architectural knowledge: tacit, documented and formalized
- Among others used for:
  - Architect him/herself, over time
  - Development team
  - Evolution/maintenance team
  - Other architect for same or related system

**Software Architecture: Assumptions**
- Software architecture is hard to change
- Consequently, design architectures carefully
  - Architecture assessment
  - Architecture design
  - Software architecture is static, the stable part of the system

=> Inflexible architecture is good/fact of life!

**Why is SW architecture hard to change?**
- Ignored aspect of the problem
- Loss of design knowledge – vaporizes during
  - Architecture design
  - Component development
  - System evolution

=> Architectural design decisions are lost

### Architectural design decisions

**Architectural Design Decision**
A description of the set of architectural additions, subtractions and modifications to the software architecture, the rationale, the design rules, design constraints, and additional requirements that (partially) realize one or more requirements on a given architecture.

**Evaluation**

- First class architectural concepts
- Clear, bilateral relationship between architecture and realization
- Support for basic change types

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### Conclusion

- Architectural design decisions are an important notion in the evolution of software architectures
- Gap between tool support for rationale capturing, architectural change, and software architecture tools
- Plenty of work for software architecture evolution tools!

### Future work

- Archium, a tool realizing the concept of architectural design decisions (www.archium.net)